IN THE CLAIMS

Claims 1-65 (Canceled).

66. (Previously presented) A system that acquires and analyzes spectral images of a wafer, the system comprising:

a plurality of stations;

a transfer mechanism operable to transfer the wafer between each of the plurality of stations;

an illumination source that illuminates the wafer as the wafer is transferring between the plurality of stations;

a spectral imager configured to detect light of the illumination source that is reflected from the wafer as the transfer mechanism is transferring the wafer between the plurality of stations, the spectral imager configured to produce a plurality of one-dimensional spectral frames using information of the light reflected from the wafer as the wafer is transferring between the plurality of stations; and

circuitry for analyzing said plurality of one-dimensional spectral frames and aggregating at least one of the one-dimensional spectral frames to form two-dimensional spectral images.

67. (Previously presented) The system of claim 66, wherein the wafer includes a substrate and at least one layer of at least one thin film on the substrate, wherein the at least one thin film includes a plurality of properties, wherein the plurality of properties comprise a thickness value of the at least one layer at one or more sites on the wafer.

Claim 68 (Canceled).

69. (Previously presented) A method for imaging a wafer having one or more film layers, comprising:

illuminating the wafer with light;

positioning the wafer so that a portion of the wafer is illuminated;

detecting light reflected from the portion of the wafer using a spectral imager configured to produce a sequence of one-dimensional spectral frames while the spectral imager and the wafer undergo relative motion provided by a transfer mechanism moving the wafer between a plurality of stations;

aggregating said sequence of one-dimensional spectral frames to form a two-dimensional spectral image, and analyzing said two-dimensional image to determine a property of the film layers.

70. (Previously presented) The method of claim 69, wherein the property is a thickness value of one of the one or more film layers at one or more sites on the wafer.

Claim 71 (Canceled).

72. (Previously presented) A CMP system that images a wafer, comprising:

a plurality of stations for performing one or more aspects of a CMP process;

a wafer transfer mechanism disposed within the system to transfer the wafer between said stations;

a light source for illuminating the wafer while the wafer transfer mechanism is transferring the wafer between the stations;

a spectral imager disposed to detect light from the light source that is reflected from the wafer and configured to produce a plurality of one-dimensional spectral frames while said spectral imager and the wafer undergo relative motion provided by said wafer transfer mechanism; and

circuitry for processing said plurality of one-dimensional spectral frames, wherein the circuitry aggregates sequential one-dimensional spectral frames to form a two-dimensional spectral image, and analyzes said two-dimensional spectral image to determine one or more properties of one or more film layers of the wafer.

73. (Previously presented) The system of claim 72, wherein the one or more properties include a thickness value of one of the one or more film layers at one or more sites on the wafer.

Claim 74 (Canceled).

75. (Previously presented) A method for imaging a wafer having one or more film layers, comprising:

illuminating the wafer with light;

positioning the wafer so that a portion of the wafer is illuminated;

detecting light reflected from the portion of the wafer using a spectral imager configured to produce a sequence of spatially contiguous one-dimensional spectral frames while said spectral imager and the wafer undergo relative motion provided by a transfer mechanism used to move wafers between stations; and

aggregating said frames to form a two-dimensional spectral image.

76. (Previously presented) The method of claim 75, further comprising analyzing the two-dimensional spectral image, wherein analyzing determines a film layer thickness value of one of the one or more film layers at one or more sites on the wafer.

Claim 77 (Canceled).

78. (Previously presented) A semiconductor wafer processing system that acquires and analyzes spectral images of a wafer prior to, during, and/or following a process, the system comprising:

a plurality of stations;

a wafer transfer mechanism disposed within the system to transfer the wafer between the stations;

a light source for illuminating the wafer while the wafer is transferred between said stations;

a spectral imager disposed to detect light from the light source that is reflected from the wafer, the spectral imager ~~is~~ configured to produce a plurality of one-dimensional spectral frames while said spectral imager and the wafer undergo relative motion provided by said wafer transfer mechanism; and

a processor for analyzing said plurality of one-dimensional spectral frames, wherein the processor aggregates sequential one-dimensional spectral frames to form two-dimensional spectral images.

Claims 79 and 80 (Canceled).

81. (Previously presented) The system of claim 78, wherein the process includes one or more of a CVD process, a CMP process, or a stand-alone metrology process.

82. (Previously presented) The system of claim 78, wherein the stations include one or more of a load station, an unload station, or a process station.

83. (Previously presented) The system of claim 78, wherein the lights source is one of pulsed or continuous while said spectral imager detects light.

84. (Previously presented) A semiconductor wafer processing system that provides and analyzes spectral images of a wafer having one or more film layers prior to, during, and/or following a process, the system comprising:

a wafer transfer mechanism disposed within the system to transfer the wafer between a load station and a wafer chuck;

a light source for illuminating the wafer while the wafer is transferred between said load station and said wafer chuck;

a spectral imager disposed to detect light reflected from the wafer and configured to produce a one-dimensional spectral frame while said spectral imager and the wafer undergo relative motion of transferring the wafer; and

a processor that analyzes said one-dimensional frame.

Claims 85 and 86 (Canceled).

87. (Previously presented) A semiconductor wafer imaging system that acquires and analyzes spectral images of a wafer having one or more film layers, the system comprising:

a first processing system that performs a first manufacturing process on the wafer;

a second processing system that performs a second manufacturing process on the wafer, where said second manufacturing process follows said first manufacturing process;

a wafer transfer mechanism disposed to transfer the wafer between said first processing system and said second processing system;

a light source for illuminating the wafer while the wafer is transferred between said first processing system and said second processing system;

a spectral imager disposed to detect light from the light source that is reflected from the wafer during the transfer, and configured to produce one-dimensional spectral frames; and

circuitry for aggregating said one-dimensional spectral frames to form a two-dimensional spectral image and analyzing said two-dimensional spectral image to determine a film layer property of the one or more film layers.

88. (Previously presented) The system of claim 87, wherein the one or more film layer properties ~~is~~ include a thickness value of one of the one or more film layers at one or more sites on the wafer.

89. (Previously presented) A method of obtaining and analyzing a spectral image of a wafer having one or more film layers, the method comprising:

securing the wafer from a first processing system using a transfer mechanism;

illuminating the wafer with light from a light source;

positioning the wafer using said transfer mechanism so that a portion of the wafer is illuminated by light from said light source;

detecting light reflected from said portion of the wafer using a spectral imager configured to produce a sequence of contiguous one-dimensional spectral frames while said transfer mechanism moves the wafer;

aggregating said sequence of contiguous one-dimensional spectral frames to form a two-dimensional spectral image;

analyzing said two-dimensional image to determine one or more film layer properties of the one or more film layers; and

transferring the wafer to a second processing system.

90. (Previously presented) The method of claim 89, wherein the one or more film layer properties ~~is~~ include a thickness value of one of the one or more film layers at one or more sites on the wafer.

Claims 91-155 (Canceled).